



A.D. 1872, 30th JULY. N^o 2279.

SPECIFICATION

OF

ISAAC BROWN.

TREATING SEWAGE.

LONDON:

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1873.



A.D. 1872, 30th JULY. N° 2279.

Treating Sewage.

LETTERS PATENT to Isaac Brown, of Elm Croft Grange, Edinburgh, in the County of Mid Lothian, North Britain, for the Invention of “IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE MANUFACTURING OF MANURES.”

Sealed the 1st October 1872, and dated the 30th July 1872.

PROVISIONAL SPECIFICATION left by the said Isaac Brown at the Office of the Commissioners of Patents, with his Petition, on the 30th July 1872.

I, ISAAC BROWN, of Elm Croft Grange, Edinburgh, in the County of
5 Mid Lothian, North Britain, do hereby declare the nature of my said
Invention for “IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE
MANUFACTURING OF MANURES,” to be as follows:—

This Invention relates to the treatment of sewage, and the production
of a manure from the solid or heavy portions of such sewage, as
10 follows:—

The sewage is in the first place intercepted by a filter screen, or a
series of such filter screens. Such screens I have found suitable when

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constructed of faggots, with a lining of wire gauze, these screens being so arranged as to be readily removable for washing or cleansing. The effluent liquid is after such filtration in a fit state (when the sewage has been intercepted in a fresh state at its outfall) either for purposes of irrigation, or may be passed into rivers without detriment, or may be 5 distributed over the land by means of the Invention for which I applied for Letters Patent on the 17th May 1872, No. 1511.

The solid matter which has been intercepted as above may be then removed in any convenient manner, and may be employed either as a manure direct, or when desired may be converted into a portable manure by the 10 addition thereto of about one-half of its weight of ground phosphate of lime with about the same weight of sulphuric or other acid, but these proportions may be varied. The combination of these three materials produces in a very short period (a few hours) a free portable manure fit for use, by which the great expense attendant on drying sewage and 15 similar materials for the purposes of manure is avoided, whilst a better and more valuable product is obtained.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Isaac Brown in the Great Seal Patent Office on the 22nd January 1873.

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TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ISAAC BROWN, of Elm Croft Grange, Edinburgh, in the County of Mid Lothian, North Britain, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirtieth day of July, in the year 25 of our Lord One thousand eight hundred and seventy-two, in the 36th year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Isaac Brown, Her special license that I, the said Isaac Brown, my executors, administrators, and assigns, or such others as I, the said Isaac Brown, my executors, adminis- 30 trators, or assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend,

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within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE MANUFACTURING OF MANURES," upon the condition (amongst others) that I, the said Isaac Brown, my executors or
5 administrators, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

10 NOW KNOW YE, that I, the said Isaac Brown, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, that is to say:—

My said Invention relates to the treatment of sewage, and the pro-
15 duction of a manure from the solid or heavy portions of such sewage, as follows:—

The sewage is, according to my Invention, in the first place intercepted by a filter screen of peculiar construction, or a series of such filter screens, such filters being constructed of faggot work or wicker work,
20 faggots having a lining of wire gauze. These filters are so arranged as to be readily removable for washing or cleansing by a hose jet or otherwise. The effluent liquid is after such filtration in a fit state (when the sewage has been intercepted in a fresh state at its outfall) either for purposes of irrigation, or may be passed into rivers without detriment, or
25 may be distributed over the land by means of the Invention for which I obtained Letters Patent dated the Twenty-second of July One thousand eight hundred and seventy-one, No. 1940.

The solid matter which has been intercepted as above described may be then removed by dredgers connected with the intercepting tanks, or in
30 any convenient manner, and may be employed either as a manure direct, or, when desired, may be converted into a portable manure by the addition thereto of a sufficient quantity of ground phosphate of lime and sulphuric or other acid to reduce the phosphate of lime in the sewage, and those added to it, to a soluble phosphate of lime, and at the same
35 time, by this chemical action, change the organic constituents of the sewage in a few hours to a free portable manure fit for use, by which the great expence attendant on drying sewage and similar materials for

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the purposes of manure is avoided, whilst a better and more valuable manure product is obtained.

In carrying out my system of straining or filtration of sewage matter I employ suitable depositing tanks, consisting of a series of any convenient number, each one being at a slightly lower level than the preceding 5 one, and separated therefrom by a transverse wall, over the sill of which the fluid sewage matter flows in a thin sheet or film to the next lower tank, whilst a portion of the solid matter held in mechanical suspension deposits in the bottom of each tank.

On the top or sill of the overflow wall of the different tanks, or upon 10 the last one of the series I place a wire screen, by preference of about one-eighth of an inch mesh, for the purpose of straining the sewage matter flowing over and intercepting the floating solid matter before it enters a final depositing tank of any desired depth with a rounded or trough-shaped bottom for the facility of removing the deposited matter 15 therefrom when requisite. In front of this last-named depositing tank, and forming in fact one side thereof, are placed a number of faggot or wickerwork filters, by preference composed of withies or willows, which are closely tied or bound together, and arranged vertically side by side close together in any convenient frame or support to enable the faggot or 20 wickerwork filters to maintain their upright position against the lateral pressure of the sewage matter in the tank. Behind the first row of faggot or wickerwork filters I dispose one or more rows of similar filters, according to the degree of straining or filtration required. Behind the last row of these filters or faggotwork I dispose a frame provided with a 25 number of vertical guiding grooves disposed side by side, and down between and within these grooves I place corresponding sliding frames containing fine wire gauze, which frames can be easily lifted up and removed when required for cleaning or repairs. Immediately in front of the first row of wire gauze frames there are disposed a second or third 30 set of guiding grooves precisely the same as the first set, their object being to receive other wire gauze frames, the same as the first-mentioned frames.

When it is required to remove a frame for cleaning the same or otherwise, a second or duplicate frame is first introduced, either in front of, or 35 behind the one to be removed (as the case may be), so that a continuous flow may be maintained, and the process of filtration may not be in any

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way checked by the removal and cleaning of any of these wire gauze frames. This cleansing of the filters may be effected by simply withdrawing the frames, and reinserting them with their faces reversed, that is to say, placing them with what was the inner side (coated with deposit) on the outer side, in order that the flow of the partially filtered sewage water through the meshes may wash off and carry away any deposit adhering to the outer side or face of the reversed wire gauze filter screen; or, if found requisite, the said filter screens may be taken out and cleansed thoroughly by means of a hose or other jet of water.

The faggot filter work of withies may be cleansed in like manner to the wire gauze screens, any faggot that has been removed being replaced by a clean one, so as not to diminish the thickness of the filtering or straining medium during the time the clogged faggot is being cleansed.

Having now described and particularly ascertained the nature of my said Invention, and the manner in which the same is or may be used or carried into effect, I would observe in conclusion, that what I consider to be novel and original, and therefore claim as the Invention secured to me by the herein-before in part recited Letters Patent is,—

First. The application and use to and in the straining or filtration of liquid sewage from its solid matter of filters composed of faggot work of withies, or other suitable materials, substantially in the manner herein-before described.

Second. The application and use to and in the straining or filtering of liquid sewage matter of fine wire gauze arranged in moveable frames, substantially as and for the purpose herein-before described, so as to cleanse what is known as town sewage or other liquids from their solid constituents by a continuous flow.

Third. The combination of a depositing tank with bundles or faggots of withies, or their equivalents, and with fine wire gauze screens, substantially as and for the purpose herein-before described.

Fourth. The modes of cleansing the said wicker filter or faggot work and wire gauze filter screens, as herein-before described.

Fifth. The conversion of the sludge or solid deposited matter of sewage into a free and portable manure by the thorough admixture therewith, in

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any convenient manner, of ground phosphate of lime and sulphuric or other suitable acid, in suitable proportions, substantially as hereinbefore described.

In witness whereof, I, the said Isaac Brown, have to this my Specification set my hand and seal, this Ninth day of January, 5 One thousand eight hundred and seventy-three.

ISAAC BROWN. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1873.

